U.S. Department of Energy
Energy Efficiency and Renewable Energy
Bringing you a prosperous future where energy is clean, abundant, reliable, and affordable

Federal Energy Management Program

Demand Reduction Assessment

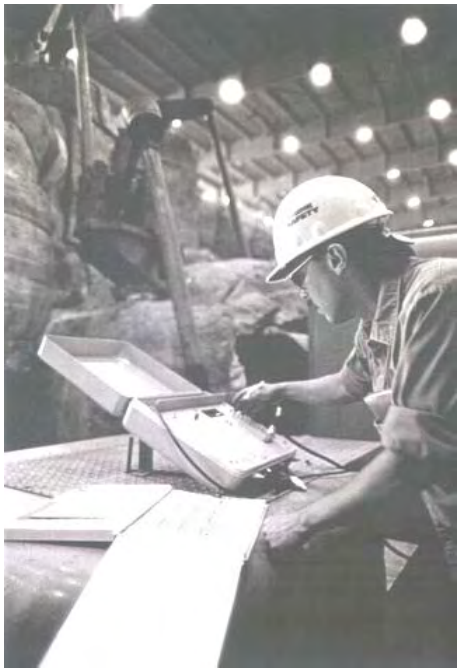
April 26, 2006 ♦ Washington D.C. ♦ Andy Walker

Planning

1. Establish committee to develop the individual facility plan including facility, agency, occupants, concessionaires, utility, etc.
2. Monitor weather forecasts to predict high demand days and be proactive in communicating with the local utility to assess need to reduce load.
3. Prepare and keep updated "Plan of Action for Emergency Electricity Reductions"

"Plan of Action for Emergency Electricity Reductions"

- Separate loads into:
  - (1) Life, health and safety driven;
  - (2) Mission critical; and,
  - (3) Non-critical.
- If not separately switchable, modify systems to allow reducing non-critical loads.
- Rapidly reduce electricity loads, even if these turn off nonessential lighting and reduce corridor lighting
- Lighting measures
- Mechanical measures
- Other Electrical Systems



Occupancy Awareness

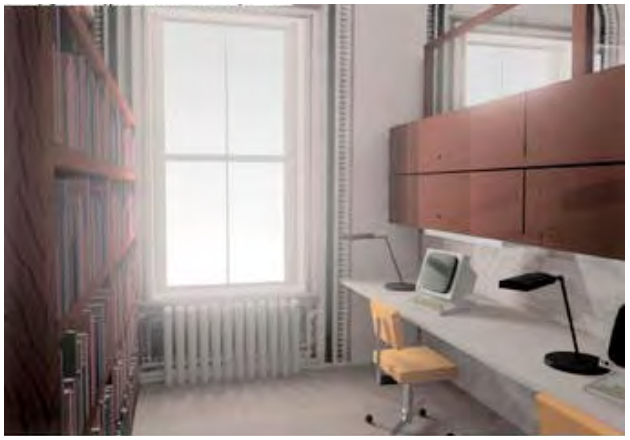
1. Through organizational channels, inform occupants of the emergency that requires electricity reductions and the goals of the program.
2. Enhances mission by mitigating larger risk of energy failure; some actions may temporarily effect employee comfort or convenience.
3. Alert employees of expected high demand days in advance to allow employees to take load reduction measures at home and to dress appropriately.
4. Provide useful feedback to occupants regarding total facility demand and demands for individual major loads (install separate metering if available) compared to the goal
5. Involve advertising, recognition, and rewards.

Personal Computers And Appliance Measures

1. Focus on keeping all portable heaters off
1. Turn off printers if not in use.
2. Turn off monitors if not in use.
3. Ensure ENERGY STAR power down features are activated.
1. If computers do not have ENERGY STAR features available, turn them off when leaving the office for more than 30 minutes.
2. Ensure personal appliances, such as coffee pots and radios are turned off.

Lighting Measures

1. Turn off lights in all unoccupied rooms
2. In areas with sufficient daylighting, turn off lights. Adjust blinds, if available, to reduce glare.
3. Use general lighting and turn off task lighting if sufficient lighting levels for safety and productivity.
4. Turn off display and decorative lighting.
5. Reduce corridor lighting



Air Conditioning Measures

1. Allow space temperatures to raise as high as 78 degrees F
2. Shut down non-essential space cooling
3. Shut down cooling up to one hour before the normal close of each workday
4. Allow casual attire, to make higher temperatures more acceptable.
5. Allow chilled water temperature to drift above normal settings during peak periods.
6. Duty cycle air handling units off. Ensure adequate outside air flow rates to maintain indoor air quality.
7. Ensure that ventilation grilles and fan coil units are not blocked by books, flowers, debris, or other obstructions.

Other

1. Operate emergency generators
2. Shut off selected elevators and escalators. Ensure accessibility needs are met.
3. Turn off or unplug chilled water drinking fountains
4. Where feasible, schedule high electrical energy use processes during off peak periods.
5. Encourage employees to not use copiers during peak demand period. Turn off selected copiers. Ensure power saver switch on copiers is enabled.
6. Turn off unnecessary loads such as decorative fountain pumps.

Long Term Solutions

1. Consider purchasing interruptible power for selected loads with high electrical demand, and which will not suffer adverse consequences in the event of the utility turning off power. The cost savings from the lower rate may far outweigh the inconvenience of power being turned off within the interruption limitations agreed to in the utility contract.
1. Consider installing sub-metering to identify high intensity loads to be shed during emergencies.
2. Investigate thermal storage systems or alternative energy sources for air conditioning.

Long Term Solutions

4. Install motion sensors and separate lighting circuits to allow turning off unneeded lights. (Some agencies have installed switching to separate public areas from agency work spaces).
4. Install an Energy Management and Control System to allow shedding and monitoring loads from one central location. If non-critical loads are not separately switchable, modify systems to allow terminating. Local utilities or energy services companies (ESCOs) can assist with this effort.
4. Consider adding on-site generation using micro-turbines, fuel cells, combined heat and power, renewable, or other appropriate technology.

ESET & ALERT

http://www.eere.energy.gov/femp/services/assessments_alert.cfm

Energy Saving Expert Teams (ESET)

- Presidential Directive on Energy and Fuel Conservation by Federal Agencies – September 26, 2005
- Natural gas focused

Assessment of Load and Energy Reduction Teams (ALERT)

- California Energy Crisis 2001
- Electricity focused

Assessment Objectives

- Reduce energy use & cost
- Focus on reduced consumption
- Lead site to more comprehensive project

ESET & ALERT Services

- Assess operational energy efficiency measures, focusing on low-cost and no-cost measures;
- Evaluate on-site generation for to address vulnerability and/or reliability concerns;
- Identify other relevant FEMP support services;
- Identify public benefit fund;
- Provide a summary assessment of long-term efficiency opportunities; and
- Work with site personnel to develop an implementation plan.

ESET Findings

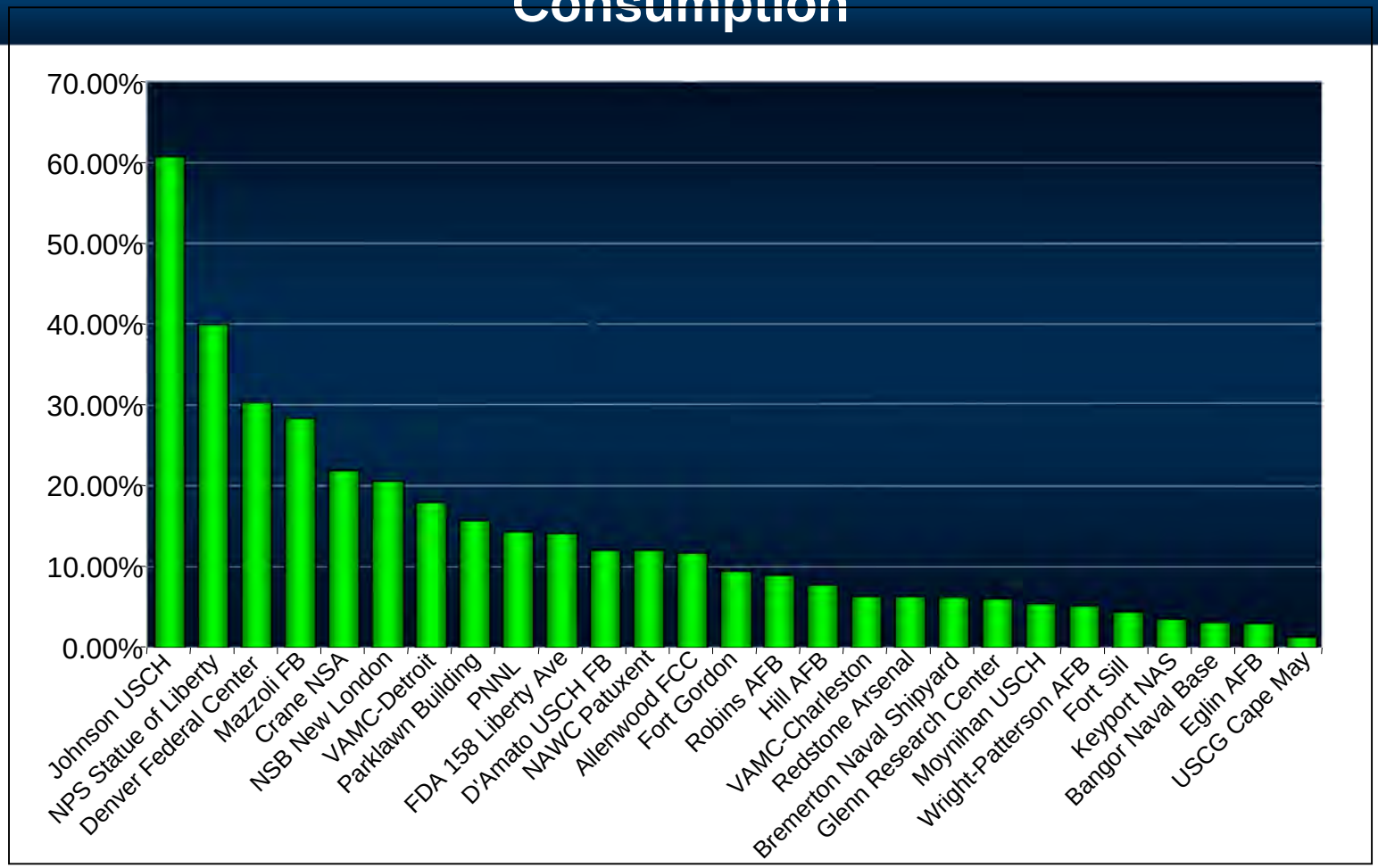
Estimated potential savings from the efficiency recommendations:

- Natural gas – 9.4% of the total consumption of all sites assessed
- The cost to implement the identified low-cost measures of the combined 28 sites is approximately $8.10/MMBTU saved. Low-cost measures were defined as less than $20,000 and/or less than 2 year simple payback.

U.S. Department of Energy
Energy Efficiency and Renewable Energy
Bringing you a prosperous future where energy is clean, abundant, reliable, and affordable

ESET Findings - Savings as % of Consumption

Natural Gas Savings Potential as a Percent of Total Site Consumption



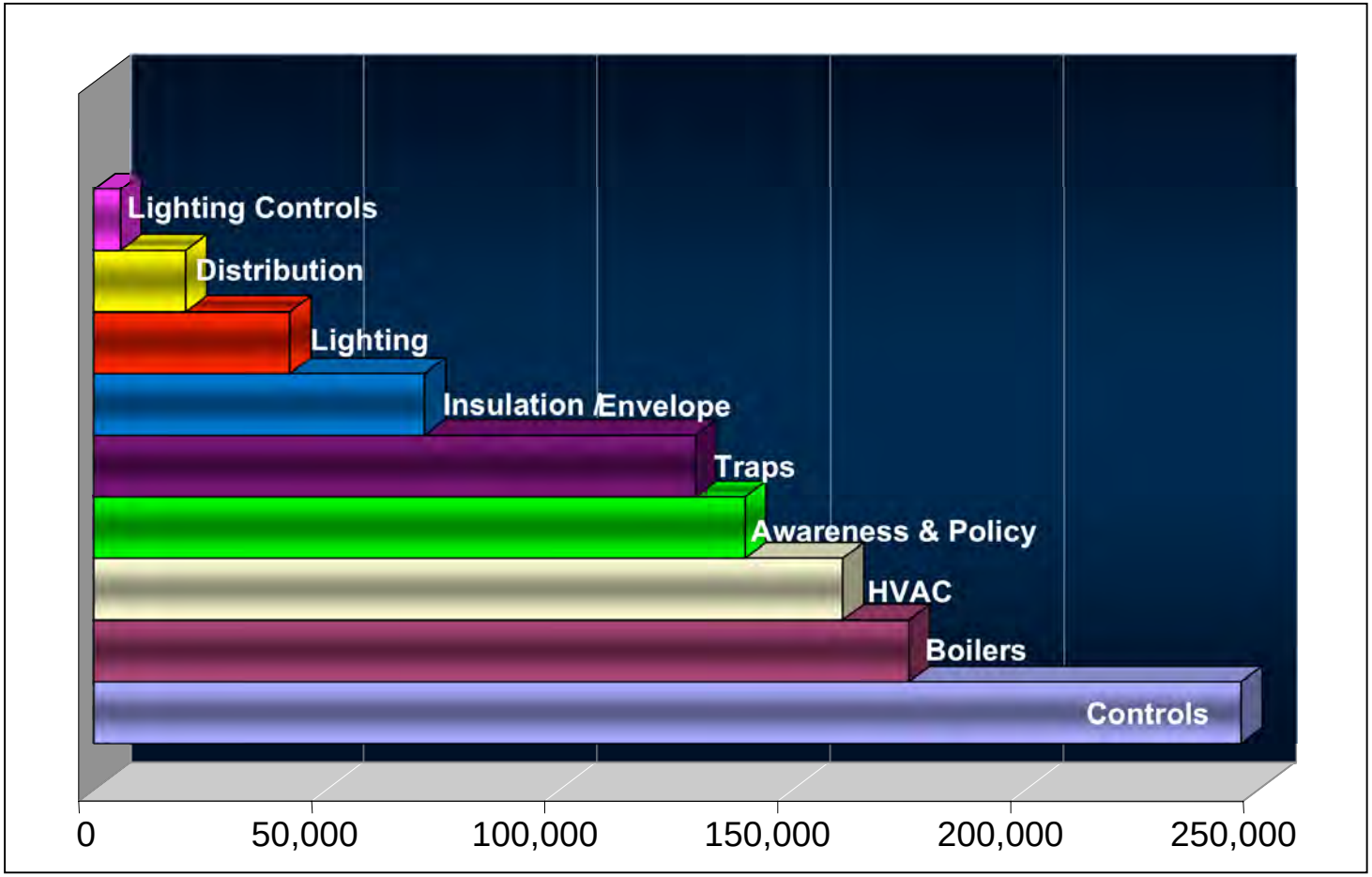
FEMP

◈ SPONSORED BY THE FEDERAL ENERGY MANAGEMENT PROGRAM ◈

U.S. Department of Energy
Energy Efficiency and Renewable Energy
Bringing you a prosperous future where energy is clean, abundant, reliable, and affordable

ESET Findings - Combined Savings by Measure

Potential Savings by Measure



FEMP

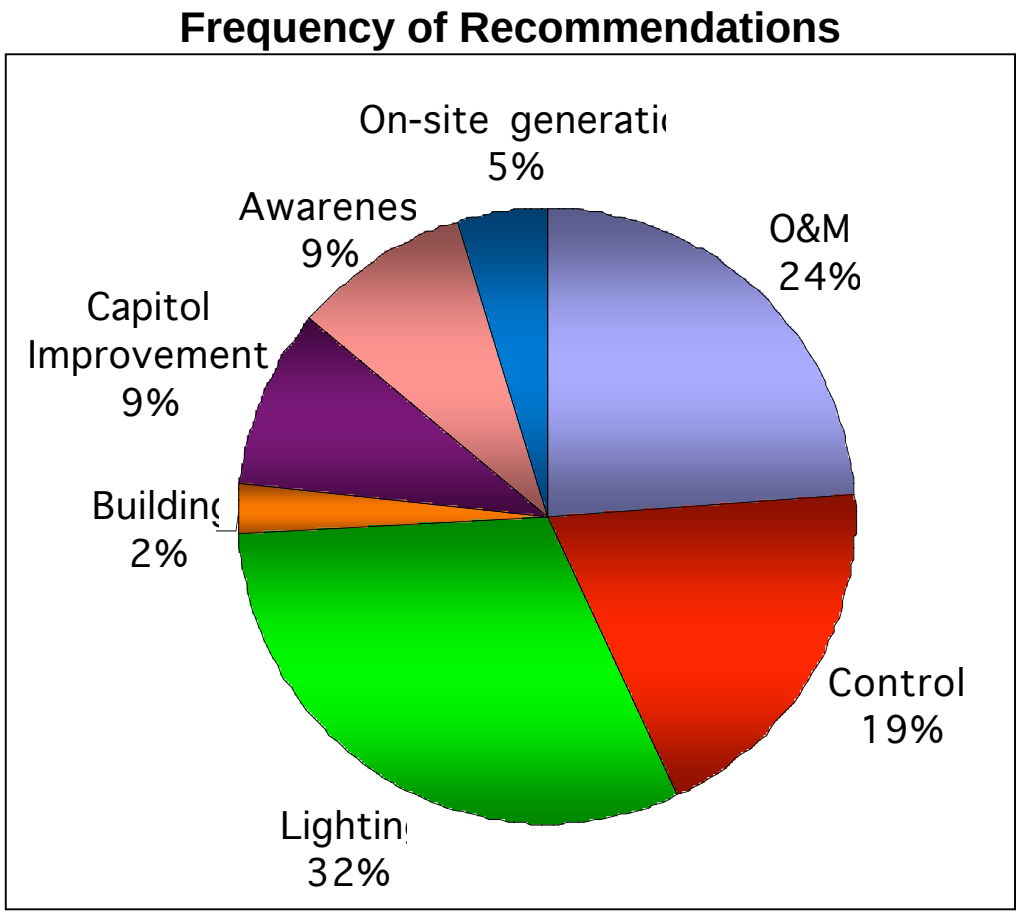
◈ SPONSORED BY THE FEDERAL ENERGY MANAGEMENT PROGRAM ◈

ALERT Findings

No- and low-cost measures that improve operational efficiency.

Estimated potential savings from the identified measures, averaged for the 25 sites

- Demand – 9.2%
- Cost – 10.4%
- Consumption – 10.6%



U.S. Department of Energy
Energy Efficiency and Renewable Energy
Bringing you a prosperous future where energy is clean, abundant, reliable, and affordable

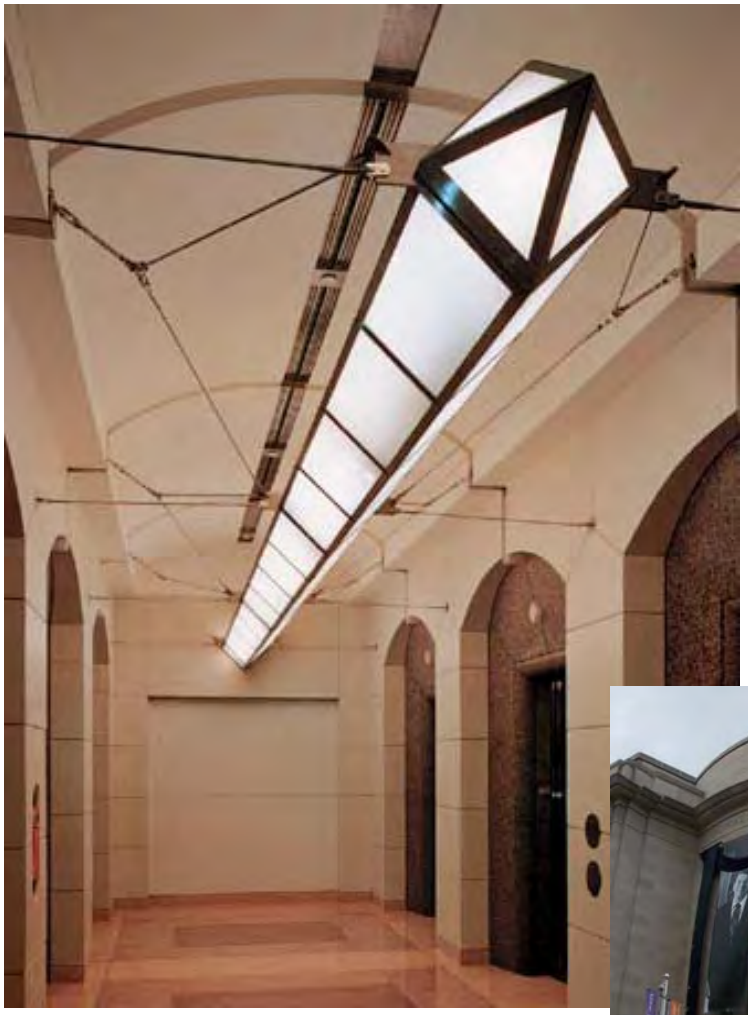
Ronald Reagan Building

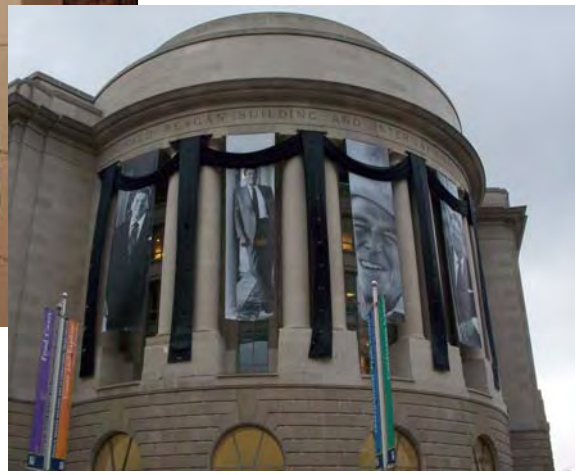
FEMP

◈ SPONSORED BY THE FEDERAL ENERGY MANAGEMENT PROGRAM ◈

U.S. Department of Energy
Energy Efficiency and Renewable Energy
Bringing you a prosperous future where energy is clean, abundant, reliable, and affordable

Ronald Reagan Building





FEMP

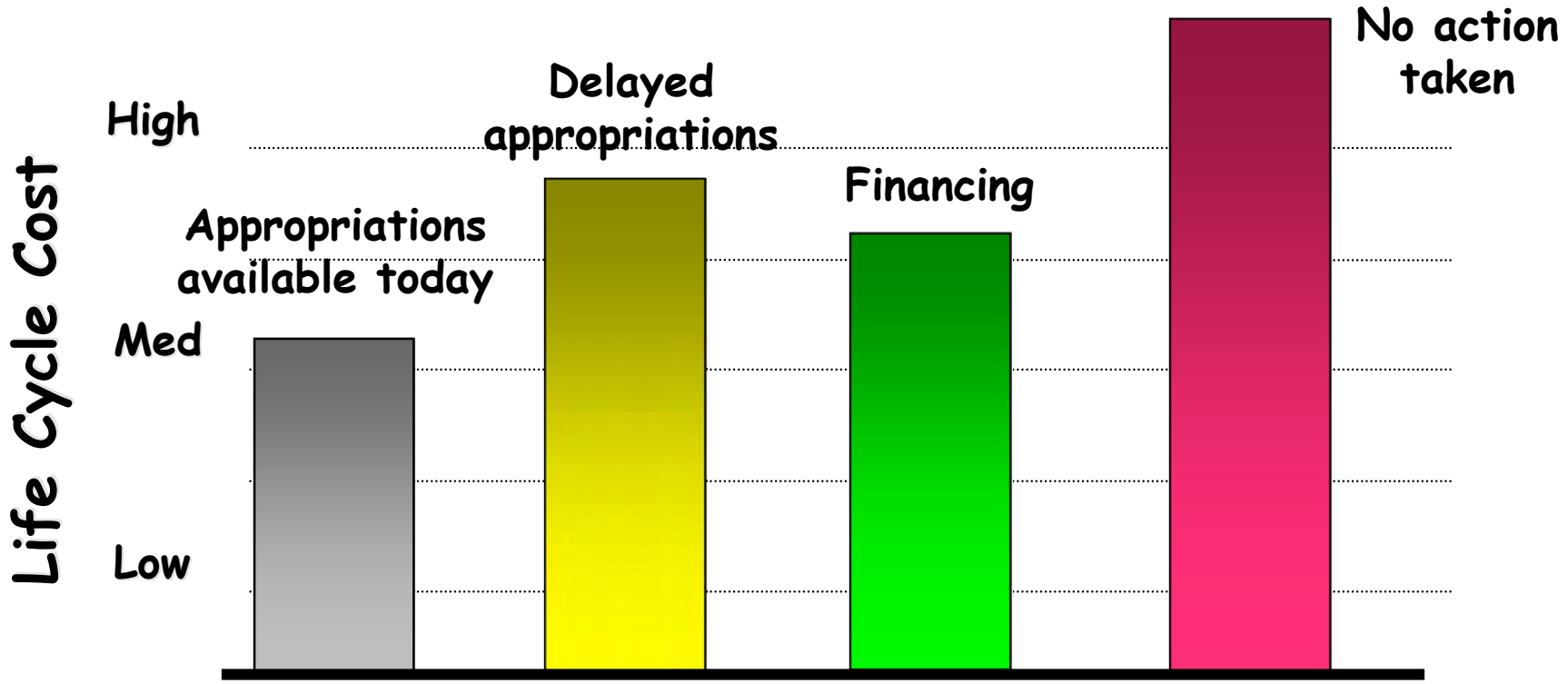
◈ SPONSORED BY THE FEDERAL ENERGY MANAGEMENT PROGRAM ◈

Review - Things to look for

1. Simultaneous heating and cooling
2. Control system overrides
3. Temperature setpoints and setbacks
4. Missing insulation
5. Missing/damaged weather stripping
6. Caulking
7. Leaking valves
8. Damper operations
9. Equipment schedules match building operating hours/plans
10. “Bio-meters” – occupant behavior such as open windows, over-/under-dressing, blocked air registers, etc.
11. Conditioned vacant space

U.S. Department of Energy
Energy Efficiency and Renewable Energy
Bringing you a prosperous future where energy is clean, abundant, reliable, and affordable

The Cost of Delaying a Project



Any delay in project implementation results in loss of life cycle savings

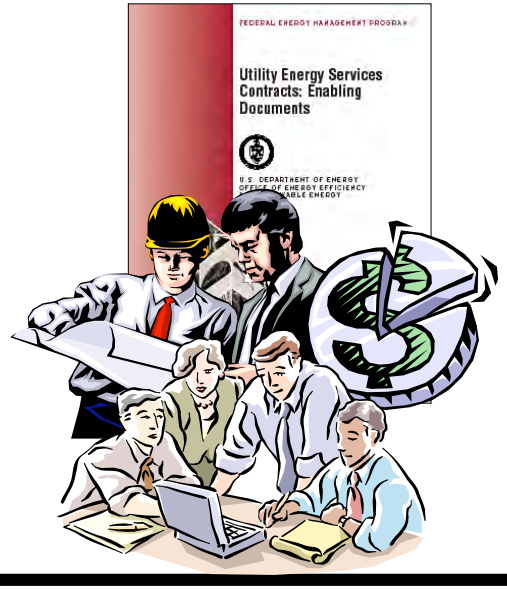
FEMP

◈ SPONSORED BY THE FEDERAL ENERGY MANAGEMENT PROGRAM ◈

U.S. Department of Energy
Energy Efficiency and Renewable Energy
Bringing you a prosperous future where energy is clean, abundant, reliable, and affordable

Federal Energy Management Program

Utility Energy Services Contracts



April 26, 2006 ♦ Washington D.C. ♦ Karen Thomas

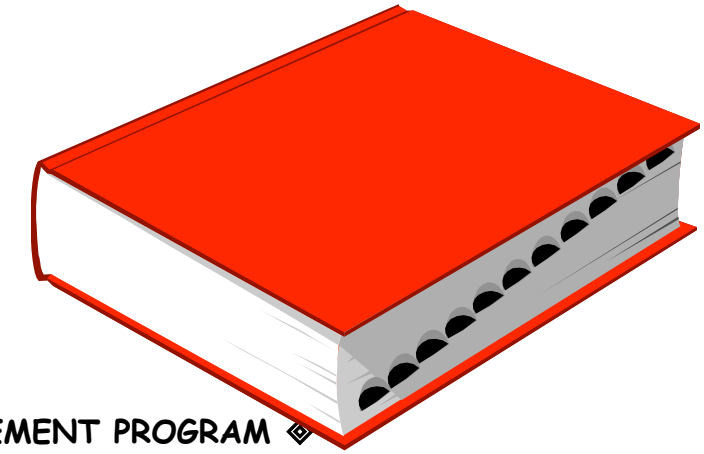
Definitions

Utility Incentive Programs:

Any service offered by a utility or developed in conjunction with an agency that assists customers in implementing energy and water conservation projects.

Utility Energy Services Contracts:

Specific contracts that allow utilities to provide agencies with comprehensive energy and water efficiency improvements and demand reduction services. Utilities front the capital costs and are paid out of savings.

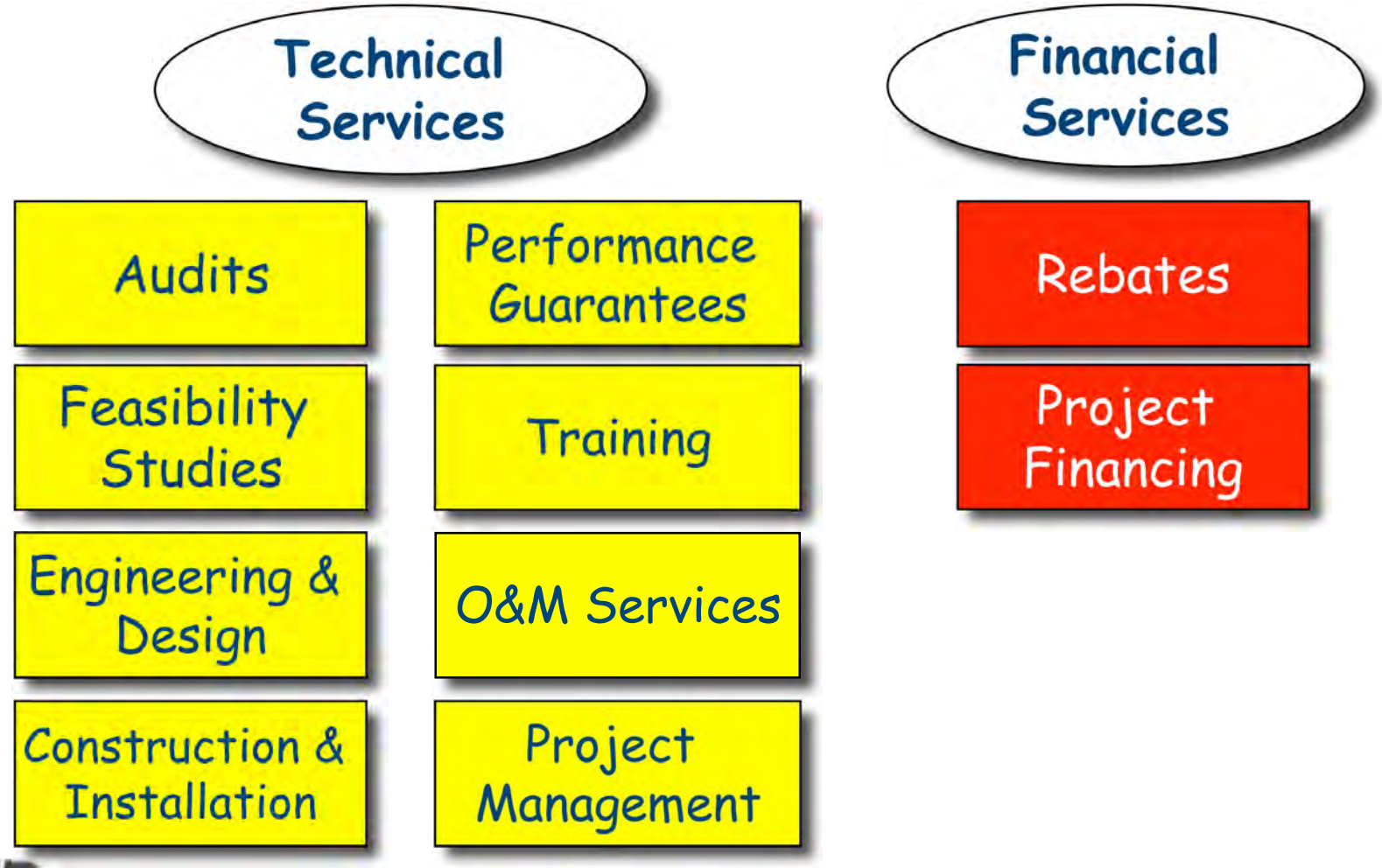


Reasons to Choose UESCs

- You work with a known entity
- Your utility has unique expertise and a knowledge of your facility
- It's an established source
- Flexibility in scope and size, smaller projects feasible
- Comprehensive approach
- It's a partnership that is mutually beneficial!

Pepco has implemented over $50 million in UESC projects

Typical UESC Offerings

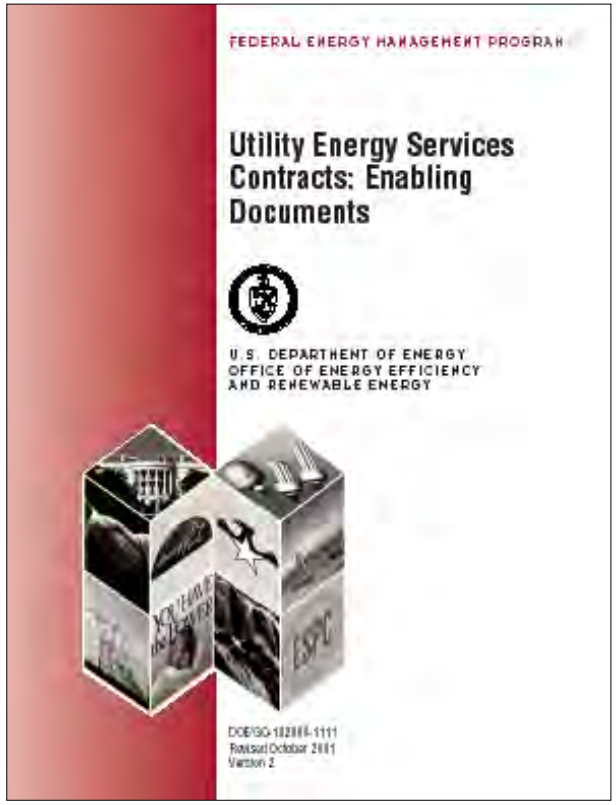


Why implement UESC projects?

- Solves facility headaches and continues opportunity to save energy and lower demand
- Increasing energy prices
- Most cost effective form of pollution prevention
- The introduction of rolling blackouts
- Helps to meet EPAct 2005 requirements

FEMP's UESC Enabling Documents

- Details:
  - Legislation and Executive actions
  - Legal opinions
  - Agency guidance
- Available both in hard copy and electronically
  - www.eere.energy.gov/femp/pdfs/28792.pdf



U.S. Department of Energy
Energy Efficiency and Renewable Energy
Bringing you a prosperous future where energy is clean, abundant, reliable, and affo[illegible]

FEMP Assistance/ Upcoming UESC Workshops

For FEMP Assistance Call:

- David McAndrew – (202) 586-7722 (FEMP Utility Program)
- Karen Thomas – (202) 646-5223 (UESC)
- Andy Walker – (303) 384-7531 (Technical Assistance)

FEMP Website: www:eere.energy.gov/femp

Utility Energy Services Contracting Projects Workshops:

- June 22 – Detroit, Michigan
- June 28 & 29 – Washington, DC